

In the Claims: Amend the claims as follows.

1.(currently amended)        A device for electrolytically treating electrically conductive structures on surfaces of work pieces (1) the structures being electrically insulated against each other, by using a method comprising continuously conveying the work pieces (1) on a conveying path and in a direction of transport with the structures being electrolytically treated thereby, said device comprising:

- a) at least one arrangement, comprising at least one electrode (6, 14) for contacting the work pieces (1) and at least one electrolysis region in a respective one of which at least one counter electrode (4) and the work pieces (1) are in contact with the processing liquid, characterized in that
- b) the at least one contacting electrode (6, 14) is disposed outside of the at least one electrolysis region and is not in contact with the processing liquid, and
- c) the at least one contacting electrode (6, 14) and the at least one electrolysis region are spaced ~~so close together~~ no more than a few centimeters apart that small electrically conductive structures can electrolytically be treated, further characterized in that
- d) at least two contacting electrodes (6, 14) are provided, at least one of them being disposed on one side of the electrolysis region and the at least other one on the other side of the electrolysis region, and
- e) the electrolysis region is ~~so short~~ less than 5 cm in length such that the electrically conductive structures are in constant electrical contact with one of the contacting electrodes (6, 14).

2.(original)    The device according to claim 1, characterized in that electrically conductive structures of 5 cm can electrolytically be treated.

3.(cancelled)



4.(cancelled)

5.(previously presented)      The device according to any one of the preceding claims 1-2, characterized in that it further comprises at least one processing module (M, M1, M2, M3, M4, M5, M6) containing the processing liquid and the at least one counter electrode (4), the work pieces (1) being conveyed there through in a horizontal direction of transport, the at least one processing module (M, M1, M2, M3, M4, M5, M6) comprising, on the entrance and on the exit side thereof respectively, at least one passage for the work pieces (1) to enter and to exit said module and the at least one contacting electrode (6, 14) being disposed on the passages.

6.(previously presented)      The device according to any one of claims 1-2, characterized in that it further comprises at least one tank (12) containing the processing liquid and the at least one counter electrode (4) and that the conveying path leads via the surface of the processing liquid into the tank (12), to the at least one counter electrode (4) disposed within the processing liquid and from there, via the surface of the processing liquid again, out of the tank (12), the at least one contacting electrode (6, 14) being disposed on the surface of the processing liquid.

7.(previously presented)      The device according to claim 6, characterized in that the conveying path repeatedly leads via the surface of the processing liquid into the tank (12), through the liquid and via the surface again out of the tank (12), being thereby turned round by deviating means (18).

8.(previously presented)      The device according to any one of the preceding claims 1-2, characterized in that it comprises partition members (21) which comprise passages and sealing members (7, 23) for passage of the work pieces (1), the partition members (21)



being disposed between the at least one contacting electrode (6, 14) and the processing liquid, said sealing members (7, 23) being disposed in such a manner that processing liquid can be prevented from coming into contact with the at least one contacting electrode (6, 14).

9.(previously presented) The device according to claim 8, characterized in that the sealing members are selected from the group comprising squeezing rollers (7), sealing lips (23) and scrapers.

10.(previously presented) The device according to claim 8, characterized in that the at least one contacting electrode (6, 14) is secured to the partition walls (24).

11.(previously presented) The device according to any one of the preceding claims 1-2, characterized in that the at least one contacting electrode (6, 14) is selected from the group comprising rollers and brushes (14).

12.(original) The device according to claim 11 characterized in that the rollers (6) have such a small diameter and the spacing between the longitudinal axis of the rollers (6) and the at least one electrolysis region is so small that electrically conductive structures of 2 cm can electrolytically be treated.

13.(previously presented) The device according to any one of the preceding claims 1-2, characterized in that between the at least one counter electrode (4) and the work pieces (1) is disposed an electrically non-conductive ion-permeable coating (13).

14.(original) The device according to claim 13, characterized in that the coating (13) is disposed in so close proximity to the conveying path that the work pieces (1) touch the



coating (13) as they are conducted past the at least one counter electrode (4), thus acting as a seal.

15.(previously presented) The device according to any one of the preceding claims 1-2, characterized in that the conveying path is inclined to the horizontal.

16.(original) The device according to claim 15, characterized in that rinsing facilities are provided by means of which the at least one contacting electrode (6, 14) can be continuously or intermittently rinsed.

17.(previously presented) The device according to any one of the preceding claims 1-2, characterized in that the at least one counter electrode (4) and the at least one contacting electrode (6, 14) are elongate and are oriented substantially parallel to the conveying path and normal to the direction of transport.

18.(previously presented) The device according to any one of the preceding claims 1-2, characterized in that the at least one contacting electrode (6, 14) is cathodically polarized.

19.(original) The device according to claim 18, characterized in that the at least one counter electrode (4) is an insoluble anode.

20.(original) The device according to claim 19, characterized in that the anode (4) is a flood anode.

21.(previously presented) The device according to any one of the preceding claims 1-2, characterized in that the at least one contacting electrode (6, 14) and the at least one counter electrode (4) are disposed on a common carrier frame (5).



22.(previously presented) The device according to any one of the preceding claims 1-2, characterized in that it further respectively comprises at least one first and one second storing facility for storing the work pieces (1).

23.(original) The device according to claim 22, characterized in that it further comprises conveying members (18, 25) for conveying the work pieces (1) through the device from the at least one first storage facility to the at least one second storage facility.

24.(withdrawn)

25.(withdrawn)

26.(cancelled)

27.(cancelled)

28.(withdrawn)

29.(withdrawn)

30.(withdrawn)

31.(withdrawn)

32.(withdrawn)

33.(withdrawn)

34.(withdrawn)

35.(new) A device for electrolytically treating electrically conductive structures on surfaces of work pieces (1) the electrically conductive structures being electrically insulated from each other and continuously conveyed on a conveying path and in a direction of transport with the structures being electrolytically treated, said device comprising:

at least one electrolysis region (2,3) formed by cell walls (10) and holding a processing liquid and having at least one counter electrode (4), whereof each counter electrode (4) and the work pieces (1) are in contact with the processing liquid;



at least one electrode (6, 14) being in electrical contact with the work pieces (1), the electrode (6,14) being outside of the electrolysis region and not in contact with the processing liquid;

at least one layer of isolation material (13) extending between a respective counter electrode (4) and the conveying path of the work pieces (1);

wherein each respective contacting electrode (6, 14) and the respective electrolysis region are spaced less than a few centimeters apart;

wherein each counter electrode (4) extends parallel to the conveying path of the work pieces (1) throughout the entire electrolysis region (2,3);

wherein the two respective contacting electrodes (6, 14) are positioned with at least one of them being disposed on one side of the electrolysis region and the at least other one on the other side of the electrolysis region, and

wherein each electrolysis region is less than 5 cm in length whereby the electrically conductive structures on the work pieces (1) are in constant electrical contact with one of the contacting electrodes (6, 14).

36. The device of claim 35, having plural electrolysis regions (2,3) positioned adjacent to one another, whereof the work pieces (1) are conveyed there through sequentially in a horizontal direction.

37. The device of claim 36, wherein each electrolysis region (2, 3) has a respective upper counter electrode (4) above and a respective lower counter electrode (4) below, the conveying path of the work pieces (1).

38. The device of claim 37, wherein each upper and lower counter electrode (4) carries the isolation material on its face adjacent the work pieces (1) conveying path.



39. The device of claim 36 where each electrolysis region (2, 3) contains the processing liquid under pressure, with the work pieces (1) conveying path passing there through from an entrance to the electrolysis region to an exit, wherein the entrance and the exit each include sealing walls (9).

40. The device of claim 39 also including a sealing roller (7) turning in contact with the work pieces (1) in the direction of travel thereof, and in contact with the exit sealing wall (9).

41. The device of claim 40, also including a sealing roller (7) turning in contact with the work pieces (1) in the direction of travel thereof, and an auxiliary sealing roller (8) in contact with the entrance sealing wall (9) and turning in a direction opposite the direction of travel of the work pieces (1).

42. The device of claim 41, wherein the isolation material (13) on each counter electrode (4) is ion-permeable.

43. The device of claim 42, wherein the isolation material (13) prevent the work pieces (1) from contacting each counter electrode (4).

44. The device of claim 35, wherein the isolation material (13) is a coating on the surface of the respective counter electrode (4).

45. The device of claim 44, wherein the coating (13) prevents an electrical short between the work pieces (1) and the respective counter electrode (4).

46. The device of claim 45, wherein the coating (13) is a liquid absorbing material.



47. The device of claim 35, wherein the isolation material (13) wipes over the work pieces (1) and disturbs the diffusion layer.

48. The device of claim 47, wherein an electrolysis region includes inner partition walls (24) forming an inner region within the cell walls (10), wherein the pressurized processing liquid is only within the inner region partition walls (24), wherein the inner region has an entrance and an exit through respective inner partition walls (24).

49. The device of claim 48, wherein the isolation material (13) is secured to the entrance and exit of the respective inner partition walls (24) walls of the inner region to render the entrance and exit liquid tight.

50. The device of claim 49, wherein the isolation material (13) is also secured to the outside of the inner partition walls (10) about the respective entrance and exit.

51. The device of claim 50, wherein a respective exit of a cell wall (10) includes a pair of sealing lips (23) position on each face of the exit cell wall (10).

52. The device of claim 35, wherein the conveying path of the work pieces (1) is inclined from the horizontal the entire distance from the entrance cell wall (10) to the exit cell wall (10).